Outcome of Photorefractive Keratectomy with Advanced Beam Profile for Myopia

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Financial Disclosure: A. Allergan
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C. Schwind

Introduction:

SmartSurfACE combines transepithelial photorefractive keratectomy (TE-PRK) with Schwind Smart Pulse Technology. It has been shown to improve visual acuity in low to high myopia, with limited data with extremely myopic eyes. We evaluated the outcomes of using TE-PRK on the Schwind Amaris laser (SA) with SmartSurfACE beam profile for moderate to extreme myopia.

Methods:

Patients with moderate myopia, (less than -6.00D), high myopia (-6.25D to -10.00D), and extreme myopia (over -10.00D) treated with TE-PRK with SmartSurfACE beam profile at a laser refractive clinic with 12 months of follow-up were included in this retrospective study. Preoperative and 12-month postoperative uncorrected distance visual acuity (UDVA), best corrected visual acuity (CDVA), and manifest refraction were analysed.

Results:

Ranging from -0.25D to -17.50D, a total of 1128 eyes were evaluated. The moderate, high, and extreme myopia groups included 680, 372, and 76 eyes respectively. Mean spherical equivalents improved for all eyes from -5.62±2.82D to 0.01±0.37D, for moderate group from -3.75±1.42D to 0.04 ±0.33D, for high group from -7.81±1.14D to 0.01±0.37D, and for extreme myopia from -11.66±1.53D to -0.23±0.61D. UDVA ≥20/25 was achieved by 660 (97%), 352 (95%), and 60 (79%) eyes respectively. Only one patient lost ≥2 lines of vision.

Conclusion:

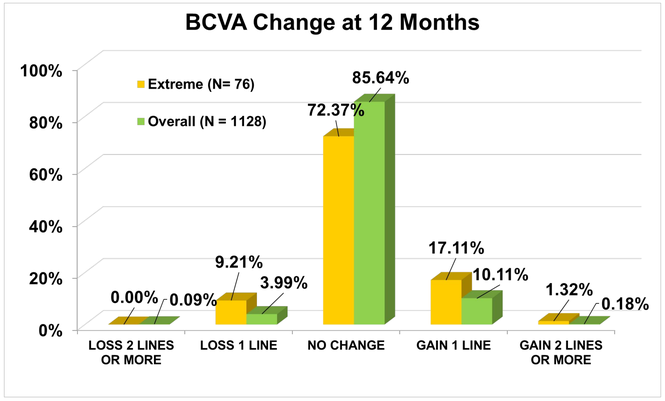
TE-PRK with SA with SmartSurfACE beam profile showed efficacy and safety in a range of myopic eyes, including extremely myopic patients. This technique provides an alternative to LASIK and SMILE, which may be limited by low pachymetry, and avoids risks such as ectasia.

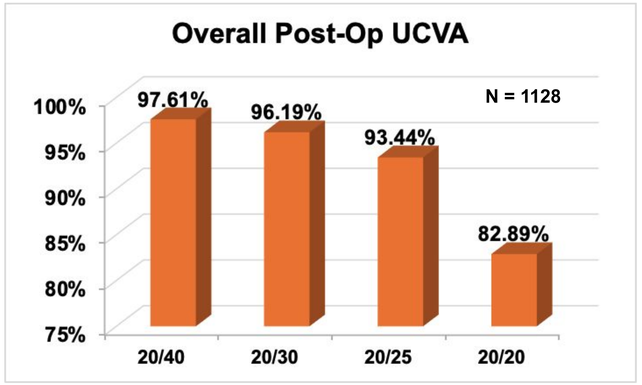
Spherical Equivalent	Pre-Op	Post-Op
Average	-5.62	0.01
Standard Deviation	2.82	0.37

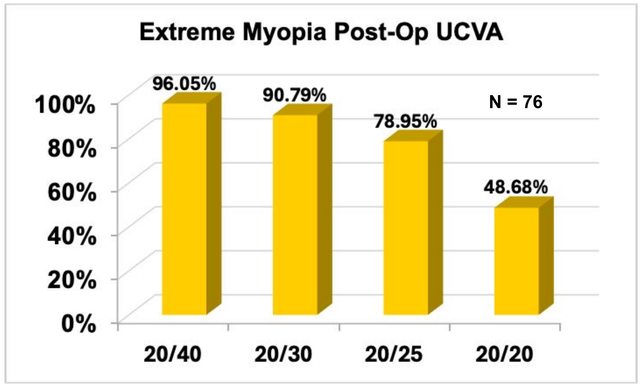
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2. Lin, D. T., Holland, S. P., Verma, S., Hogden, J., & Arba-Mosquera, S. (2017). Postoperative corneal asphericity in low, moderate, and high myopic eyes after transepithelial PRK using a new pulse allocation. *Journal of Refractive Surgery*, *33*(12), 820-826. https://doi.org/10.3928/1081597x-20170920-02

Refractive Outcomes:







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